

# **LARGE FORMAT BOLOMETER ARRAYS FOR FAR INFRARED, SUBMILLIMETER, AND MILLIMETER WAVELENGTH ASTRONOMY**

Harvey Moseley  
NASA Goddard Space Flight Center, Code 685, Greenbelt, MD 20771

## **ABSTRACT**

Imaging, spectroscopy, and polarimetry at far infrared, submillimeter, and millimeter wavelengths promise to provide a unique new vision of the early universe and of the evolutionary processes, which have produced our world. SIRTf, SOFIA, and Herschel, which are under development, will provide the means to address many questions of galaxy evolution and star formation. These missions will provide the scientific and technical base for the next generation of missions. The decadal survey has recommended the SAFIR mission to provide a high performance far infrared observatory to probe early galaxy evolution and star formation. CMBPOL was recommended to enable a search for the effects of gravitational waves in the early universe on the CMB. Both of these missions require large arrays of sensitive far infrared/mm detectors in order to meet their scientific objectives. I will describe the present state of far infrared bolometer arrays, which are the current detectors of choice beyond 200  $\mu\text{m}$ , and the path towards the large format sensitive arrays required by these future missions. TES bolometers with multiplexed SQUID readouts are the strongest candidates today; they can meet sensitivity requirements, and the superconducting readout provides for easy interfaces, and low power dissipation. The production of large, high performance arrays is essential for SAFIR and CMBPOL, and is a sufficiently difficult task that it will require a coordinated effort among the entire development community to assure timely success.

*Editor's note: The manuscript of this presentation is not available for the proceedings.*